(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 032 140**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **81850002.7**

(22) Date of filing: **08.01.81**

(51) Int. Cl.³: **B 65 B 11/02**

(30) Priority: **08.01.80 SE 8000140**

(43) Date of publication of application:
15.07.81 Bulletin 81/28

(84) Designated Contracting States:
CH DE FR GB IT LI NL

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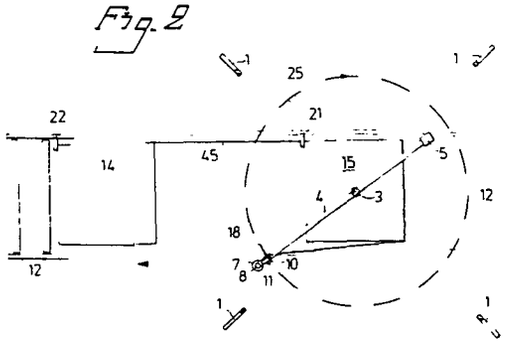
(54) Method and device for stretch film packaging.

(57) Stretch film packaging of articles is performed in a line operation wherein a ready wound article is removed from a packaging station with unbroken film web between the ready wound article and a stretch film roll which can be revolved relative to the packaging station. A new article to be packaged is then introduced into the station whereafter the winding is continued and at the end of the first winding turn, the film web is guided beside the tensioned free film web portion, which extends into engagement with the new article, whereafter the stretch film is overlappingly wound over the first winding turn on the new article. The film web portion is severed at the end of the second winding turn by means of a severing means 18 which is carried by a guide by means of which the film web is wound around the still-standing article.

Fig. 2



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TITLE

Method and device for stretch film packaging

TECHNICAL FIELD

The invention refers to a method at packaging of articles, especially pallets goods, by wrapping with stretch film, wherein a stretch film web is withdrawn from a supply and is wound around an article in a packaging station, the web is guided by means of a guide which is revolved around the still-standing article, the article after finished wrapping, is removed from the station with unbroken film web between the ready wound article and the guide, a new article to be packaged is introduced into the station, and at the end of the first winding revolution, the film web is guided beside the tensioned unbroken film web portion which extends from the ready wound article to the new article, by displacement of the guide in the axial direction of the winding, and the guide is brought to wind the stretch film web over already wound film on the new article. The invention also refers to a device comprising a guide for stretch film which is with-drawn from a stretch film supply, a station for an article to be packaged, and means for bringing the guide to revolve round the still-standing article in the station, the guide being arranged at the end of the first winding revolution around an article to guide the film web beside an un-broken tensioned film web portion, which extends from the previously ready wound article to engagement with

the new article, and then to wind the stretch film web over the film on the new article.

BACKGROUND

At stretch film packaging of articles, for example goods stacks carried by pallets, it is conventional to place the article in a winding station at which a roll of stretch film is arranged to revolve around the station in order to wind stretch film around the goods stack. At the beginning of the packaging operation the stretch film must be anchored at the pallet. The anchorage is normally performed thereby that an operator manually extracts film from the film supply and ties the film end at the pallet on which the goods is stacked. Thereafter the winding operation can be started by that the roll is driven around the pallet and normally two or three winding turns are made at the lower portion of the goods, whereafter the roll during revolving, is brought to raise such that the film is helically wound upwardly around the goods. It is then conventional at the end of the winding operation to let the roll move axially downwardly such that when the winding operation is finished, the roll is located in its lower position, as a preparation for the next packaging operation. Thereafter the operator intervenes again by handling severing means for severing the film web, whereafter the packaged article is removed from the wrapping station and a new article is introduced therein.

DISCLOSURE OF THE INVENTION

The inventive method starts from a technique for packaging articles, especially pallet goods, comprising wrapping the articles with stretch film, wherein a stretch film web is withdrawn from a supply and is wound around an article in a packaging

station, the web is guided by means of a guide which is revolved around the still-standing article, the article after finished winding is removed from the station with unbroken film web between the ready wound article and the guide, a new article to be packaged is introduced into the station, and at the end of the first winding revolution, the film web is passed beside the tensioned unbroken film web portion which extends from the ready wound article to the new article, by displacing the guide in the axial direction of the winding, and the guide is brought to wind the stretch film web over already wound film on the new article. The method is distinguished substantially thereby that said film web portion is severed by means of severing means carried by the guide after the first full winding revolution and preferably in connection to the second passage of the guide past the film web portion extending between the articles, whereafter the new article is ready-wound and removed from the station such that another article can be introduced into the station. Preferably the tensioned film web portion is severed in connection to the second passage of the guide past the film web portion.

The inventive device for packaging of articles, especially pallet goods, by wrapping thereof with stretch film, starts from a plant of the type comprising a guide for a stretch film which is withdrawn from a stretch film supply, a station for an article to be packaged, and means for bringing the guide to revolve around the still-standing article in the station, the guide being arranged at the end of the first winding revolution around an article to guide the film web beside an unbroken tensioned film web portion which extends from a previously ready-wound article

to engagement with the new article and then to wind the stretch film web over the film on the new article. The inventive device is then distinguished substantially thereby, that the guide carries a severing means which is mounted in a position in front of the guide and which is arranged at engagement with the film web portion to severe same. Preferably, the guide is arranged to bring a severing means to hit the film web at the end of the second winding revolution around the new article.

The film can by means of the guide be moved beside the unbroken film web portion by displacement of the guide in the plane of the film. During the first winding revolution, the guide can be brought to move in a helical path, the pitch of which preferably is larger than the width of the film web, and immediately after the first winding revolution the guide is brought to run with opposite pitch direction whereby the film is laid over the first winding turn. Hereby the film web is anchored at the new article whereby the film web portion between the ready-wound article and the new article can be severed. The severing is then to advantage performed by means of the severing means which is supported by the guide and which may consist of a glow thread or the like, the extent of which corresponds to the extent of the guide and the film web. By the invention, the film web can be severed at an early stage of the packaging of the new article. Through the invention there is avoided a deformation of the film web in connection to the severing thereof. This means that the resulting package obtained by the invention receives an aesthetically pleasing appearance. Further, the ready wound article can be positioned very close to the new article to be packaged, and this means that said

film web portion becomes relatively very short, and this means in turn a reduction of the film consumption. In comparision herewith can be mentioned, that the technique revealed in FR 2 383 074 requires the articles to be placed at relatively large mutual distance, especially when the film web has a small thickness in comparison to width, as otherwise the deformation could cause a break in the film web portion. This circumstance brings about an unnecessary high material consumption. Moreover, at the known technique, the film web portion will be deformed, which brings about that the film end becomes more difficult to attach to the package and that the package gets a less pleasing appearance. Furthermore, according to the known technique, separate clamping shoes must be arranged and be synchronized to the winding operation. The positioning of the clamping shoes and their synchronization to the winding operation is critical and constitutes a source of malfunctioning, and delays and complicates the over-all packaging operation. In relation to the known technique the invention offers a simpler, faster and less material-demanding packaging and provides a more aesthetically pleasing package. The invention accomplishes said advantages at the same time as it requires fewer control operations and working elements.

The invention is defined in the appended claims.

DRAWINGS

Fig. 1 shows schematically a side view of a stretch film packaging device according to invention. Fig. 2 shows a view taken along line II-II in Fig. 1. Fig. 3 illustrates the inventive technique for anchoring the stretch film at an article to be packaged. Fig. 4 illustrates a variant of the technique

according to Fig. 3.

EMBODIMENTS

Fig. 1 shows a stand comprising support legs 1, which support a frame 2. A motor 6 on the frame 2 is arranged to drive a vertical shaft 3 for rotation. The shaft 3 carries a bar 4, which thus can revolve in the horizontal plane. A vertical beam 8 is mounted at one end of the bar 4. The beam 8 carries at the lower end thereof a holder 10 for a stretch film roll 11. A joint 9 connects the beam 8 to the holder 10. The other end of the bar 4 suitably carries a counter weight 5. A roller track 12 extends through the device and abutments 21-22 can be arranged at the roller track 12 in order to define position along the track 12 for articles which have been or shall be packaged.

The prerequisite can be assumed to be that an article 14 has been packaged by wrapping with stretch film in the position defined by the abutment 21 and then has been displaced along the track 12 in the direction of the arrow to the position defined by the abutment 22. During this displacement the holder 10 can be assumed to have been standing still in the position 25 (see Fig. 2) and that the displacement of the article 14 has been performed without any severing of the stretch film which has been laid onto the article 14 and extends from the roll 11. Hereby an unbroken film web portion 45 will extend from the roll 10 in the position 25 to the article 14 in the position thereof defined by the abutment.

An article 15 to be packaged, is introduced along the track 12 in the direction of the arrow to a work position defined by the abutment 21

The stretch film which is anchored at the article 14 can now be wound around the article 15 by

driving the bar 4 in clockwise rotation such that a first turn of stretch film from the roller 11 is wound around the article 15. At the end of the first winding turn around the article 15, the roll holder 10 is brought to be axially displaced in order to permit the roll 11 and thus the stretch film web to pass the film web portion 45 at a position 20 corresponding to the end of the first winding turn. The rotation of the bar 4 is continued and the tensioned film fed out from the roll is during the second winding turn around the article 15, brought to overlap the first turn of stretch film on the article 15, such that the stretch film thereby is anchored at the article 15. While the bar 4 performs the second winding turn around the article 15, the film web portion 45 is severed by means of a severing means. Preferably, the severing means 13 is embodied as a knife or a glow wire 18, which is arranged at the roll holder 10 in a preceding position. If, at the end of the second winding turn, the roll holder 10 is located substantially at its axially lower position (the same as the starting position) the film web portion will then automatically be severed at the intersection point.

The packaging per se of the article 15 can now continue in a conventional manner such that the stretch film substantially is wound two or three turns around the bottom part of the article and then, by menas of the axial lifting means 7, (a lift screw or the like) is brought to raise axially while the bar 4 rotates such that the stretch film is laid in overlapping helical shape around the article 15 whereafter the means 7 is brought to lower the roll 11, such that when the article 15 is ready-wound, the roll 11 is located in an axial lower end position, the bar 4 preferably being brought to stop in the position wherein the roll

11 takes the position 25, whereafter the entire previous operation can be repeated. Hereby a line operation for packaging of articles is thus permitted.

Fig. 3 shows the running of stretch film around an article 15, the packaging of which has been begun in correspondence with the inventive technique. From Fig. 3 it can be seen that at the end of the first winding turn, the stretch film roll has been axially raised such that the film web extends beside the film web portion 45 at the "intersection point" 20, whereafter the stretch film during continued winding has been brought to overlap the first winding turn such that the stretch film is anchored at the article. Hereafter, the film web portion 45 can be severed and the packaging be continued according conventional technique. Fig. 3 illustrates a technique which to advantage is utilized in those cases when the width of the stretch film only is a fraction of the height of the article to be packaged. Fig. 4 indicates a variant of this technique, especially useful in those cases when the width of the stretch film constitutes a major portion of the height of the article to be packaged. At the technique according to Fig. 4, the holder 10 is brought to be turned out toward the horizontal plane such that the roll 10 and thereby the stretch film can pass over the film web portion 45 without having to let the stretch film extend substantially above the upper edge of the article. After having passed the "intersection point" 20 the roll 11 can, by means of the holder 10, be turned down to axial orientation whereby the film is laid overlapping the first winding turn on the article such that the stretch film is anchored at the article. Hereafter, the film web portion 45 can be severed and the packaging be continued in accordance with the mentioned

technique. It should be noted that in the embodiment according to Fig. 4, the holder 10 and the roll 11 also can be axially lifted during the turning movement.

CLAIMS

1. A method at packaging of articles, especially pallet goods, by wrapping with stretch film, wherein a stretch film web is withdrawn from a supply and wound around an article in a packaging station, the web is guided by means of a guide which is revolved around the still standing article, the article after finished wrapping, is removed from the station with unbroken film web between the ready wound article and the guide, a new article which is to be packaged, is introduced into the station, and at the end of the first winding revolution, the film web is guided beside the tensioned unbroken film web portion, which extends from the ready wound article to the new article, by displacing the guide in the axial direction of the wrapping, and the guide is brought to wind the stretch film web over already wound film on the new article, characterized in that said film web portion is separated by means of separation means carried by the guide after the first full winding revolution and preferably in connection to the second passage of the guide passed the film web portion extending between the articles, whereafter the new article is ready wound.

2. The method according to claim 1, characterized in that the film web portion extending between the articles is severed in connection to the second passage of the guide past said film web portion.

3. A device for packaging of articles, especially pallet goods, by wrapping with stretch film, comprising a guide (51) for a stretch film which is withdrawn from a stretch film supply, a station for an article (15) to be packaged, and means (3-9) for bringing the guide to revolve around the still-standing article in the station, said guide being arranged at the end of the first winding revolution around an article to guide the film web past beside an unbroaken

tensioned film web portion (45) extending from a previously ready wound article up to engagement with the new article, and then to wind the stretch film web over the film on the new article, characterized in that the guide carries a severing means (18,28) which is mounted in a position in front of the guide and is arranged at engagement with the film web portion (45) to severe same.

4. The device according to claim 3, characterized in that the guide is arranged to bring the severing means to hit the film web at the end of the second winding revolution around the new article.

Fig. 1

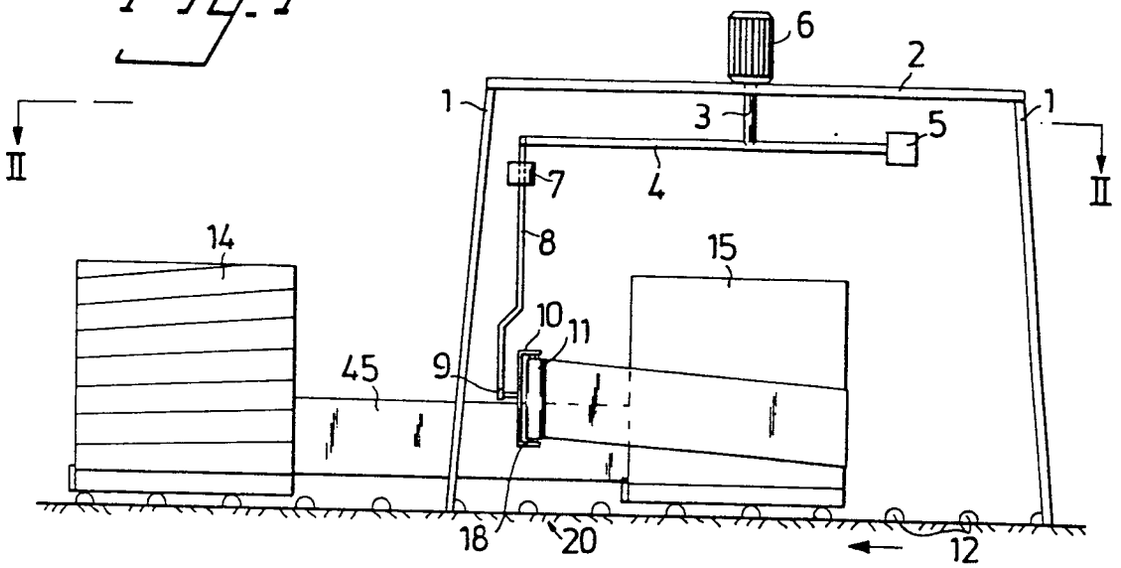
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Fig. 2

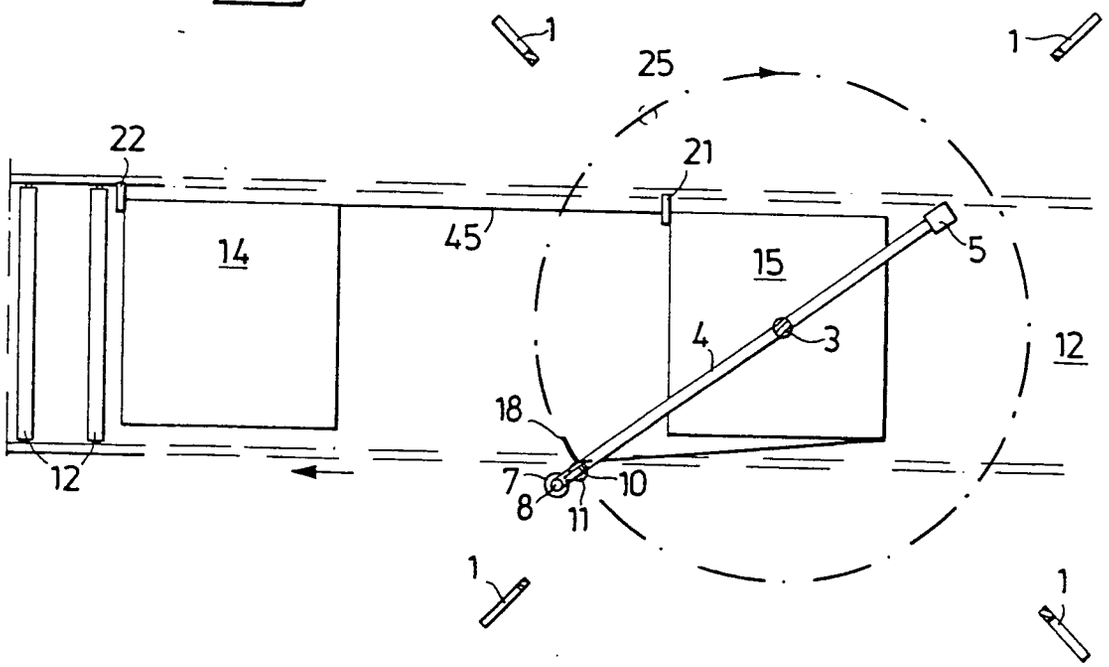
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Fig. 3

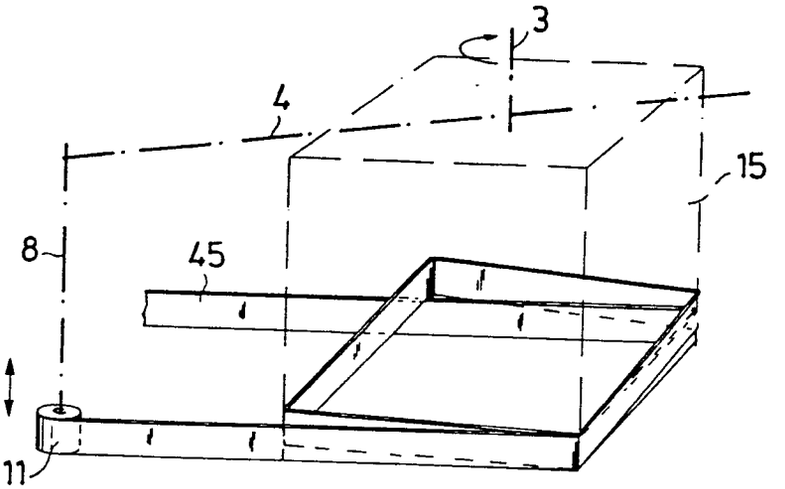

Fig. 4